

**What is claimed is:**

1. A system for multi-lingual speech recognition, comprising:

5 a speech modeling engine, receiving and  
transferring a mixed multi-lingual speech  
signal into a plurality of speech features;  
a speech search engine, coupled to the speech  
modeling engine, receiving the speech  
features, and locating and comparing a  
10 plurality of candidate data sets  
corresponding to the speech features to find  
match probability of a plurality of  
candidate speech models of the candidate  
data sets; and  
15 a decision reaction engine, coupled to the speech  
search engine, selecting a plurality of  
resulting speech models corresponding to the  
speech features according to the match  
probability from the candidate speech models  
20 to generates a speech command.

2. The system as claimed in claim 1, wherein  
the speech models are characterized by diphone models.

3. The system as claimed in claim 1, wherein  
the speech searching engine locates and compares the  
candidate data sets by referring a multi-lingual model  
database.

4. The system as claimed in claim 3, wherein the multi-lingual model database comprises multi-lingual context-speech mapping data.

5. The system as claimed in claim 4, further comprising:

5 a multi-lingual baseform mapping engine, comparing a plurality of multi-lingual query commands to obtain a plurality of multi-lingual baseforms; and  
a cross-lingual diphone model generation engine, coupled to the multi-lingual baseform mapping engine, selecting and combining the  
10 multi-lingual baseforms to generate the multi-lingual context-speech mapping data.

6. The system as claimed in claim 3, wherein the multi-lingual model database comprises a plurality of multi-lingual anti-models.

7. The system as claimed in claim 6, further comprising:

5 at least one uni-lingual anti-model generation engine, receiving a plurality of multi-lingual query commands to generate a plurality of uni-lingual anti-models corresponding to specific languages; and  
an anti-model combination engine, coupled to the uni-lingual anti-model generation engine,  
10 calculating the uni-lingual anti-models to generate the multi-lingual anti-models.

8. The system as claimed in claim 1, wherein the speech search engine locates and compares the candidate data sets, further referring the connecting sequences of the speech features and a speech rule  
5 database.

9. A method for multi-lingual speech recognition, comprising the steps of:

transferring a mixed multi-lingual speech signal  
into a plurality of speech features;  
5 locating and comparing a plurality of candidate  
data sets corresponding to the speech  
features to find match probability of a  
plurality of candidate speech models of the  
candidate data sets; and  
10 selecting a plurality of resulting speech models  
corresponding to the speech features from  
the candidate speech models according to the  
match probability to generate a speech  
command.

10. The method as claimed in claim 9, wherein the speech models are characterized by diphone models.

11. The method as claimed in claim 9, wherein location and comparison of the candidate data sets refers a multi-lingual model database.

12. The method as claimed in claim 11, wherein the multi-lingual model database comprises multi-lingual context-speech mapping data.

13. The method as claimed in claim 12, further comprising the steps of:

5       comparing a plurality of multi-lingual query  
          commands to obtain a plurality of multi-  
          lingual baseforms; and  
      selecting and combining the multi-lingual  
          baseforms into the multi-lingual context-  
          speech mapping data.

14. The method as claimed in claim 13, wherein selection and combination further comprises the steps of:

5       fixing left contexts of the multi-lingual  
          baseforms and mapping right contexts of the  
          multi-lingual baseforms to obtain a mapping  
          result;  
      fixing right context and mapping the left  
          contexts of the multi-lingual baseforms to  
10       obtain the mapping result if the right  
          contexts of the multi-lingual baseforms  
          mapping fails; and  
      obtaining the multi-lingual context-speech  
          mapping data according to the mapping  
15       result.

15. The method as claimed in claim 11, wherein the multi-lingual model database comprises a plurality of multi-lingual anti-models.

16. The method as claimed in claim 15, further comprising the steps of:

receiving a plurality of multi-lingual query  
commands corresponding to specific languages  
5 and generate a plurality of uni-lingual  
anti-models; and  
combining the uni-lingual anti-models to generate  
the multi-lingual anti-model.

17. The method as claimed in claim 9, wherein  
locating and comparison of the candidate data sets  
further refers the connecting sequences of the speech  
features and a speech rule database.